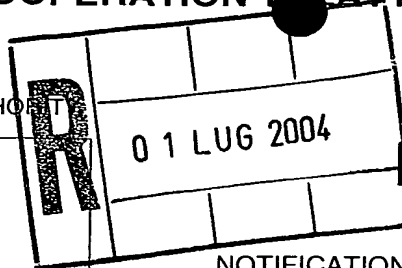


# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY



To:

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NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing  
(day/month/year)

29.06.2004

Applicant's or agent's file reference  
48633 ZM/s

## IMPORTANT NOTIFICATION

International application No.  
PCT/EP 03/07239

International filing date (day/month/year)  
07.07.2003

Priority date (day/month/year)  
17.07.2002

Applicant  
S.M.A.R.T. S.R.L. et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

### 4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international preliminary examining authority:



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# INTERNATIONAL PRELIMINARY EXAMINATION REPORT



(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 48633 ZM/js	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/07239	International filing date (day/month/year) 07.07.2003	Priority date (day/month/year) 17.07.2002
International Patent Classification (IPC) or both national classification and IPC B21H9/02		
Applicant S.M.A.R.T. S.R.L. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand  17.02.2004	Date of completion of this report  29.06.2004
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Ritter, F  Telephone No. +49 89 2399-2387 

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/EP 03/07239

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

2-4 as originally filed  
1, 1a filed with telefax on 15.06.2004

**Claims, Numbers**

1-2 filed with telefax on 15.06.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

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EXAMINATION REPORT**

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**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 2

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 2 are so unclear that no meaningful opinion could be formed (*specify*):

**see separate sheet**

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the said claims Nos.

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the Standard.

☐ the computer readable form has not been furnished or does not comply with the Standard.

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1
	No: Claims	
Inventive step (IS)	Yes: Claims	1
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1
	No: Claims	

2. Citations and explanations

**see separate sheet**

**Re Item III**

**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The subject-matter of claim 2 is so unclear that no meaningful opinion can be formed. Claim 2 seems to define an apparatus suitable to be used in an automatic rotary rolling machine as defined in claim 1, but does not contain any substantial apparatus features apart from a reciprocating member. The other features define method steps. So the structure and the purpose of this apparatus is totally unclear (Article 6 PCT).

**Re Item V**

**Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Reference is made to the following documents:**

D1: US-A-3 733 867

**2. Independent claim 1:**

The subject-matter of claim 1 is unclear. The two expressions "apparatus" and "insertion device" give the impression that they define two different parts of the rolling machine. This is not correct. The insertion device is also the device that picks up the parts from the guide and inserts them in an active position. So "apparatus" and "insertion device" are two expressions for the same entity. Furthermore, in claim 1 reference is made to a rotary rolling machine with **at least one** roller tool, but the insertion step is always defined by reference to **said** roller, i.e. one only roller.

Due to these clarity objections, the following analysis is based on the assumption that claim 1 is restricted to a rotary rolling machine with one roller tool and that the expression "apparatus" is replaced by the expression "insertion device".

Document D1, which is considered to represent the closest prior art, discloses:

An automatic rotary rolling machine (title), comprising one roller tool (18), at least one guide (32) for feeding the parts to be machined (26), and an insertion device (33-48) for picking the parts (26) from said guide (32) and inserting them in an active position (28), the insertion device (33-48)

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International application No. PCT/EP 03/07239

comprising a reciprocating member (33) provided with a means for picking a part (26) to be machined from the at least one guide (32) and for inserting it in a working position (28), said insertion device (33-48) being adapted to insert the parts to be machined (26) at an adjustable rate, so that the portions of the outer surface of the roller tool (18) that engage the parts (26) inserted in the working position are changed continuously at each turn of the spindle (column 1, line 57 to column 5, line 66).

The subject-matter of claim 1 differs from D1 in that

the reciprocating member is actuated by an electronically controlled linear motor.

The technical effect thereby achieved is a very short response time of the reciprocating member to electronic control signals, whereby the electronic control signals can be generated at any moment. This enables a constant variation of the feeding rate and thereby a further harmonisation of wear over the periphery of the roller tool.

None of the prior art documents dealing with rotary rolling machines suggests the use of an electronically controlled linear motor as actuating device for the reciprocating member. In the prior art the reciprocating member is either driven mechanically by cam drives or pneumatically.

The subject-matter of claim 1 is considered to be new and inventive (Article 33(2) and 33(3) PCT).

**Re Item VI**

**Certain documents cited**

**Certain published documents**

Application No Patent No	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
WO-A-03/099489	04/12/2003	26/05/2003	28/05/2002

CLAIMS

1. An automatic rotary rolling machine, comprising at least one roller tool, at least one guide for feeding the parts to be machined, and an apparatus for picking the parts from said guide and inserting them in an active position, an insertion device comprising a reciprocating member provided with a means for picking a part to be machined from a guide and for inserting it in a working position, said insertion device being adapted to insert the parts to be machined at an adjustable rate, so that the portions of the outer surface of said roller tool that engage the parts inserted in the working position are changed continuously at each turn of the spindle; characterized in that said reciprocating member is actuated by an electronically controlled linear motor.

2. An apparatus for an automatic rotary rolling machine, according to claim 1, characterized in that said reciprocating member inserts each part at such a rate that the portions of the outer surface of the roller tool that engage the parts inserted in the working position are changed continuously at each turn of the spindle.

## METHOD AND APPARATUS FOR INSERTING BLANKS TO BE THREADED IN AUTOMATIC ROTARY ROLLING MACHINES

The present invention relates to a method and to an apparatus for inserting blanks to be threaded in automatic rotary rolling machines.

5        Rolling machines for forming screws are known in which the thread is generated by cold rolling.

Among these, rotary rolling machines, in which the blank to be machined is rolled by virtue of a system of threaded rollers, are widely used.

10        In particular, one type of rolling machine is the roller and sector rotary type, in which there is a single roller tool and the part is rolled under pressure between the tool and a semicircular guide.

These kinds of machine usually include an automatic device for inserting the parts in the working position, which is actuated by a kinematic system, generally of the cam type, connected to the tool supporting spindle.

15        Usually, the tool supporting roller has a number of thread starts that varies between 10 and 60, depending on its diameter and on the diameter of the screw to be formed.

The cam of the kinematic system connected to the spindle must be sized so that the insertion of a part occurs at one of the starts of the roller tool.

20        Accordingly, the number of parts inserted at each turn of the spindle is a submultiple of the number of starts of the roller.

This entails that with this kind of insertion device, which is automated in a rigid manner, at each turn the parts are always inserted at the same starts of the roller, causing increased wear of the corresponding portions of the outer surface of the roller.

25        The consequence of this is an uneven wear of the threaded outer surface of the roller, which entails a reduction in the life of the tool.

US-3733867 discloses a thread rolling machine provided with a rotary die having multiple starts of a thread form and workpieces are fed in synchronism so that the starting points of threads on successive workpieces gradually moves around the periphery of the die.

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An aim of the present invention is to provide a method and an apparatus for inserting blanks to be threaded in automatic rotary rolling machines that overcome the drawbacks of the cited prior art.

An object of the invention is to provide a method and an apparatus that allow

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